Report No. MCR-22-0309
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RENESAS SEMICONDUCTOR RELIABILITY REPORT

GROUP : RX62T

DEVICE : R5F562TXXX

APPLICATION : Consumer / Industry

Quality Assurance Div.
Renesas Electronics Corporation

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Table. Reliability test results (QFP)

Test Items	Reference	Test Conditions	Results Failure/Size	Comment
High Temperature Operating Life (HTOL)	JESD22-A108	Ta=125 ℃, Vccmax, 1000 hrs	0/22	
High Temperature Storage Life (HTSL)	JESD22-A103	Ta=150 ℃, 1000 hrs	0/22	
Temperature Humidity bias (THB) (*1)	JESD22-A101	Ta=85 ℃, RH=85 %, Vccmax, 1000 hrs	0/22	
Temperature Cycling (TC) (*1)	JESD22-A104	Ta=-65 ℃ to 150 ℃ , 300 cycles	0/22	
Latch-Up (LU)	JESD78	Pulse Current Injection, I=+/-150 mA	0/3	
Electrostatic discharge (ESD-HBM)	JS-001	1.5 kΩ, 100 pF, +/-2000 V, 1 time	0/3	Class: 2
Electrostatic discharge (ESD-CDM)	JEITA ED-4701/302	+/-1000V,1time	0/3	Class: Equivalent to C2b
Solderability (SD)	J-STD-002	245 ℃, 5 s, Solder coverage ≥95 %	0/5	
Resistance to Soldering Heat (PC)	JESD22-A113, J-STD-020	MSL3(Moisture Sensitivity Level 3)	0/22	

*1) With preconditioning per JESD22-A113, MSL 3
・It is tested to confirm that all the samples are satisfied with an individual product specification.

Note :
Basically qualification tests were performed using a representative product with the same wafer process and the same package structure .

The failure rate of the device in an actual use condition can be estimated by the below procedure.

・Equation for the failure rate estimation (λ)

$$\lambda = \lambda b \times \pi T \quad (FIT)$$

①Unique failure rate (λb)

λb= 0.03 FIT

Unique failure rate at Ta=55 ℃ using 60 % confidence level.

②Temperature term (πT)

$$\pi T = exp\{11600 \times Ea \times (1/(273+55) - 1/(273+Ta))\}$$

Ea : Activation energy (eV)
Ta : Ambient temperature (℃)

πT simplified chart as Ea=0.7 eV

Ta (℃)	40	50	55	60	65	70	75	80	85	90	100	110
πT	0.31	0.68	1	1.45	2.08	2.95	4.15	5.77	7.96	10.88	19.82	34.99

・MTTF (Mean Time To Failure)

$$MTTF = 1/\lambda$$

Reference about Renesas package code

Package type		Package code *1
Lead type plastic package	QFP	PxQP
Non-lead type plastic package	QFN	PxQN
Grid array type plastic package	BGA	PxBG
	LGA	PxLG

*1. First four digit

Table. Product list

No	Group	Product part number	Package code
1	RX62T	R5F562T6ADFF	PLQP0080J*
2	RX62T	R5F562T6AGFF	PLQP0080J*
3	RX62T	R5F562T6BDFF	PLQP0080J*
4	RX62T	R5F562T6BGFF	PLQP0080J*
5	RX62T	R5F562T6DDFF	PLQP0080J*
6	RX62T	R5F562T6EDFF	PLQP0080J*
7	RX62T	R5F562T6GDFF	PLQP0080J*
8	RX62T	R5F562T6GGFF	PLQP0080J*
9	RX62T	R5F562T6HDFF	PLQP0080J*
10	RX62T	R5F562T6HGFF	PLQP0080J*
11	RX62T	R5F562T7ADFF	PLQP0080J*
12	RX62T	R5F562T7AGFF	PLQP0080J*
13	RX62T	R5F562T7BDFF	PLQP0080J*
14	RX62T	R5F562T7BGFF	PLQP0080J*
15	RX62T	R5F562T7DDFF	PLQP0080J*
16	RX62T	R5F562T7EDFF	PLQP0080J*
17	RX62T	R5F562T7GDFF	PLQP0080J*
18	RX62T	R5F562T7GGFF	PLQP0080J*
19	RX62T	R5F562T7HDFF	PLQP0080J*
20	RX62T	R5F562T7HGFF	PLQP0080J*
21	RX62T	R5F562TAADFF	PLQP0080J*
22	RX62T	R5F562TAAGFF	PLQP0080J*
23	RX62T	R5F562TABDFF	PLQP0080J*
24	RX62T	R5F562TABGFF	PLQP0080J*
25	RX62T	R5F562TADDFF	PLQP0080J*
26	RX62T	R5F562TAEDFF	PLQP0080J*
27	RX62T	R5F562TAGDFF	PLQP0080J*
28	RX62T	R5F562TAGGFF	PLQP0080J*
29	RX62T	R5F562TAHDFF	PLQP0080J*
30	RX62T	R5F562TAHGFF	PLQP0080J*
31	RX62T	R5F562T7ADFH	PLQP0112J*
32	RX62T	R5F562T7AGFH	PLQP0112J*
33	RX62T	R5F562T7BDFH	PLQP0112J*
34	RX62T	R5F562T7BGFH	PLQP0112J*
35	RX62T	R5F562T7DDFH	PLQP0112J*
36	RX62T	R5F562T7EDFH	PLQP0112J*
37	RX62T	R5F562TAADFH	PLQP0112J*
38	RX62T	R5F562TAAGFH	PLQP0112J*
39	RX62T	R5F562TABDFH	PLQP0112J*
40	RX62T	R5F562TABGFH	PLQP0112J*
41	RX62T	R5F562TADDFH	PLQP0112J*
42	RX62T	R5F562TAEDFH	PLQP0112J*
43	RX62T	R5F562T6ADFK	PLQP0064G*
44	RX62T	R5F562T6AGFK	PLQP0064G*
45	RX62T	R5F562T6BDFK	PLQP0064G*
46	RX62T	R5F562T6BGFK	PLQP0064G*
47	RX62T	R5F562T6DDFK	PLQP0064G*
48	RX62T	R5F562T6EDFK	PLQP0064G*
49	RX62T	R5F562T7ADFK	PLQP0064G*
50	RX62T	R5F562T7AGFK	PLQP0064G*

No	Group	Product part number	Package code
51	RX62T	R5F562T7BDFK	PLQP0064G*
52	RX62T	R5F562T7BGFK	PLQP0064G*
53	RX62T	R5F562T7DDFK	PLQP0064G*
54	RX62T	R5F562T7EDFK	PLQP0064G*
55	RX62T	R5F562TAADFK	PLQP0064G*
56	RX62T	R5F562TAAGFK	PLQP0064G*
57	RX62T	R5F562TABDFK	PLQP0064G*
58	RX62T	R5F562TABGFK	PLQP0064G*
59	RX62T	R5F562TADDFK	PLQP0064G*
60	RX62T	R5F562TAEDFK	PLQP0064G*
61	RX62T	R5F562T6ADFM	PLQP0064K*
62	RX62T	R5F562T6AGFM	PLQP0064K*
63	RX62T	R5F562T6BDFM	PLQP0064K*
64	RX62T	R5F562T6BGFM	PLQP0064K*
65	RX62T	R5F562T6DDFM	PLQP0064K*
66	RX62T	R5F562T6EDFM	PLQP0064K*
67	RX62T	R5F562T7ADFM	PLQP0064K*
68	RX62T	R5F562T7AGFM	PLQP0064K*
69	RX62T	R5F562T7BDFM	PLQP0064K*
70	RX62T	R5F562T7BGFM	PLQP0064K*
71	RX62T	R5F562T7DDFM	PLQP0064K*
72	RX62T	R5F562T7EDFM	PLQP0064K*
73	RX62T	R5F562TAADFM	PLQP0064K*
74	RX62T	R5F562TAAGFM	PLQP0064K*
75	RX62T	R5F562TABDFM	PLQP0064K*
76	RX62T	R5F562TABGFM	PLQP0064K*
77	RX62T	R5F562TADDFM	PLQP0064K*
78	RX62T	R5F562TAEDFM	PLQP0064K*
79	RX62T	R5F562T7ADFP	PLQP0100K*
80	RX62T	R5F562T7AGFP	PLQP0100K*
81	RX62T	R5F562T7BDFP	PLQP0100K*
82	RX62T	R5F562T7BGFP	PLQP0100K*
83	RX62T	R5F562T7DDFP	PLQP0100K*
84	RX62T	R5F562T7EDFP	PLQP0100K*
85	RX62T	R5F562TAADFP	PLQP0100K*
86	RX62T	R5F562TAAGFP	PLQP0100K*
87	RX62T	R5F562TABDFP	PLQP0100K*
88	RX62T	R5F562TABGFP	PLQP0100K*
89	RX62T	R5F562TADDFP	PLQP0100K*
90	RX62T	R5F562TAEDFP	PLQP0100K*
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